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FY 2000 President's Budget Estimates

EXHIBIT R-2, RDT&E,N Budget Item Justification

DATE: February 1999

BUDGET ACTIVITY: 6

PROGRAM ELEMENT: 0605866N

PROGRAM ELEMENT TITLE: Navy Space and Electronic Warfare (SEW) Support

(U) COST: (Dollars in Thousands)

PROJECT NUMBER TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R0739 Navy C4I Top Level Requirements	915	1,606	780	1,627	1,677	1,691	1,727	1,764	CONT.	CONT.
X0706 EMI Reduction and Radio Frequency Management	1,480	1,860	1,656	1,733	1,852	1,828	1,891	1,994	CONT.	CONT.
Total	2,395	3,466	2,436	3,360	3,529	3,519	3,618	3,758	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Project R0739 Navy C4I Top Level Requirements - Analyzes fleet requirements and research and development technology to develop top level plans for operating Navy Communications, Command and Control Computers, and Intelligence (C4I) and space systems in the Space and Electronic Warfare (SEW) mission area.

Project X0706 Electromagnetic Interference (EMI) Reduction and Radio Frequency (RF) Management - Develops advanced technology to identify and reduce EMI sources from Navy systems and platforms.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under RDT&E MANAGEMENT SUPPORT because it supports the operations and installations required for general research and development use.

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EXHIBIT R-2a, RDT&E,N Project Justification

DATE: February 1999

BUDGET ACTIVITY: 6 PROGRAM ELEMENT: 0605866N PROJECT NUMBER: R0739  
PROGRAM ELEMENT TITLE: SEW Support PROJECT TITLE: Navy C4I Top Level Requirements

(U) COST: (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TOTAL PROGRAM
R0739	Navy Command, Control, Communications, Computers and Intelligence (C4I) Top Level Requirements 915	1,606	780	1,627	1,677	1,691	1,727	1,764	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides analysis of fleet requirements and research and development technology to develop top level plans for operating Navy Communications, C4I and space systems in the Space and Electronic Warfare mission area.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1998 ACCOMPLISHMENTS:

- (U) (\$66) Analyzed and developed new educational requirements associated with development of an Information Warfare Professional Program with its associated restructured Naval Postgraduate School curricula and restructuring of subspecialty program database.
- (U) (\$99) Analyzed and identified C4ISR parameters of greatest payoff in strike operations effectiveness.
- (U) (\$140) Conducted study and developed System Operational manual for the Global Broadcast System.
- (U) (\$124) Conducted study and developed methodology for sorting through the various emerging commercial satellite communications systems to determine which is the most cost-effective.
- (U) (\$104) Analyzed and assessed the need for, and built a prototype, of a real-time processing Common Operating Environment kernel.
- (U) (\$128) Conducted study and developed a long-term (also referred to as a roadmap) for the development of a single architecture to provide pre-mission planning support and real time information and replanning capability to the warfighter.
- (U) (\$108) Analyzed and determined effects of employing Complementary Technology and Complementary Processing would have on the speed and efficiency of data processing and system performance.

R-1 Shopping List - Item No 146-2 of 146-11

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Exhibit R-2a, RDT&E,N Project Justification (Project R0739)

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EXHIBIT R-2a, RDT&E,N Project Justification

DATE: February 1999

BUDGET ACTIVITY: 6      PROGRAM ELEMENT: 0605866N      PROJECT NUMBER: R0739  
PROGRAM ELEMENT TITLE: SEW Support      PROJECT TITLE: Navy C4I Top Level Requirements

- (U) (\$146) Identified Theater Medical Information Program maritime alternatives for shipboard telemedicine with performance thresholds and objectives. Convened IPT to achieve requirement consensus among CNO, CINCPACFLT, CINCLANTFLT, and Medical staffs.

2. (U) FY 1999 PLAN:

D. (U) SCHEDULE PROFILE: Not applicable.

- (U) (\$130) Identification and quantification of the effects of operator training quality on Tactical Data Link (TADIL) systems operational effectiveness.
- (U) (\$115) Develop and maintain a cadre of personnel with specialized educations and focused experience as information warriors. Builds on success of FY 98 effort with tracking system to ensure personnel distribution of IW professionals is matched to their abilities.
- (U) (\$127) Identify and evaluate tools that can enhance the effectiveness of the average shipboard LAN administrator.
- (U) (\$83) Redesign of a system to combine the Mobile Ashore Support Terminal (MAST) and Mobile Integrated Command Facility (MICFAC) capabilities.
- (U) (\$166) Study and plan for the magnitude of the requirements and robust applications which emerged during the FY 98 study of the Naval Warfare Mission Planning Roadmap. Builds on 98 study by further defining the scope of the problem and ensuring a joint interoperability.
- (U) (\$190) Determine requirements for mobile user communications for the year 2007 and examine advanced system concepts to ascertain the most cost-effective way to meet the requirements.
- (U) (\$428) Assess the commercial SATCOM industry with an eye toward engaging the commercial SATCOM industry to take advantage of developments in commercial technology, influence commercial designs, and develop an acquisition strategy that builds the "Best Business case" for the Navy.
- (U) (\$85) Identify those C4ISR components which have the greatest effect on overall Navy strike operational success and to use these results to identify candidate programs for new or enhanced RDTEN support. Provides extensive modeling and analysis to support contentions provided by 98 effort.
- (U) (\$150) Assess and quantify, within the Revolution in Business Affairs (RBA) framework, how becoming a Network Centric Navy enables efficiencies from process and organizational changes.

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EXHIBIT R-2a, RDT&E,N Project Justification

DATE: February 1999

BUDGET ACTIVITY: 6

PROGRAM ELEMENT: 0605866N

PROJECT NUMBER: R0739

PROGRAM ELEMENT TITLE: SEW Support

PROJECT TITLE: Navy C4I Top Level Requirements

- (U) (\$100) Study the utility of redundancies in communications paths, and describe their use in terms of the importance of the information exchange requirement.
- (U) (\$32) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 USC 638.
- 3. (U) FY 2000 PLAN:
  - (U) (\$331) Identify programs and actions to improve networking of C4I systems, including configuration management for both hardware and software, enhanced security, and dynamic network management services.
  - (U) (\$295) Strategize overall planning/mapping/design for outsourced service packages offered for the Department of the Navy.
  - (U)(\$154) Enable modeling paradigm demonstration in a joint environment.

B. (U) PROGRAM CHANGE SUMMARY:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
1.(U) FY 1999 President's Budget:	950	1,611	1,617
(U) Appropriated Value:	0	1,611	0
(U) Adjustments from FY 1999 PRESBUDG:	-35	-5	-837
(U) FY 2000 President's Submission:	915	1,606	780

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1998 adjustment is due to SBIR assessment (-24) and minor adjustment (-11). The FY 1999 adjustment is due to Revised Economic Assessment (-4) and CIVPERS (-1). The FY 2000 adjustment is due to C4I RDT&E,N expenditure carryover (-836), NWCF rate adjustment (+8), CIVPERS (+2) and Non Pay Inflation (-11).

(U) Schedule: Not applicable.

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Exhibit R-2a, RDT&E,N Project Justification (Project R0739)

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EXHIBIT R-2a, RDT&E,N Project Justification

DATE: February 1999

BUDGET ACTIVITY: 6

PROGRAM ELEMENT: 0605866N

PROJECT NUMBER: R0739

PROGRAM ELEMENT TITLE: SEW Support

PROJECT TITLE: Navy C4I Top Level Requirements

(U) Technical: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E: Not applicable.

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EXHIBIT R-2a, RDT&E,N Project Justification

DATE: February 1999

BUDGET ACTIVITY: 6 PROGRAM ELEMENT: 0605866N  
PROGRAM ELEMENT TITLE: SEW Support

PROJECT NUMBER: X0706  
PROJECT TITLE: EMI Reduction and Radio  
Frequency Management

(U) COST: (Dollars in Thousands)

PROJECT NUMBER TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X0706 EMI Reduction and Radio Frequency Management	1,480	1,860	1,656	1,733	1,852	1,828	1,891	1,994	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Electromagnetic Interference (EMI) Reduction and Radio Frequency (RF) Management. This project develops tools to identify and reduce EMI sources from Navy systems and platforms. There are several tools under development to identify and reduce EMI through proper use of the electromagnetic spectrum. The Battle Force (BF) EMI Evaluation System (BEES) is a computer-aided force-level EMI evaluation tool that is used to develop BF Electromagnetic Environmental Effects (E3) policy for naval operations in the joint arena and fosters national and international inter-platform EM compatibility (EMC) during operations and exercises. The Automated Spectrum Planning, Engineering, Coordination, and Tracking System (ASPECTS) is a computer-aided force-level communications planning and frequency management tool that is used to plan communication links, and analyze, allocate, and assign communication and radar frequencies for fleet operations. The Waveform Recording and Playback System (WRaPS) is a unique E3 testing system to be used to measure degradation of system performance due to EMI. The waveform of a potential interfering system is recorded; the recording can then be played back at a variety of test sites to evaluate the vulnerability of other systems to this waveform. Research includes advanced technology chamber (ATC), shielding effectiveness of composite materials, application of fiber optics to signal cables to eliminate EMI, and coherent measurements and development of E3 testing criteria/procedures.

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EXHIBIT R-2a, RDT&E,N Project Justification

DATE: February 1999

BUDGET ACTIVITY: 6

PROGRAM ELEMENT: 0605866N

PROJECT NUMBER: X0706

PROGRAM ELEMENT TITLE: SEW Support

PROJECT TITLE: EMI Reduction and Radio  
Frequency Management

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1998 ACCOMPLISHMENTS:

- (U)(\$603) ASPECTS: Expanded frequency assignment algorithms for EMCAP. Began development of ASPECTS and EMCAP software updates. Completed Electromagnetic Environment (EME) monitoring transition study and real-time frequency management software development. Completed development of E3 information network software bridges to multiple databases. Completed development of E3 Information Network Software bridges.
- (U)(\$578) BEES: Began development of generic and specific electronic-communication system models. Continued incorporation of Decision Trees into BEES to model operational decisions in response to EMI degradation.
- (U)(\$299) Criteria and Test Procedures: Continued to investigate industrial standards for conversion to military standards, where appropriate. Incorporated Coherent Measurement Techniques for E3 test criteria.

2. (U) 1999 PLAN:

- (U)(\$745) ASPECTS: Complete development of capability to receive real-time recordings of the EME to be used in frequency management. Continue ASPECTS and EMCAP software updates. Continue real-time frequency management software development.
- (U)(\$835) BEES: Continue development of generic and specific electronic-communication system models. Apply conditional logic to selected additional models to replicate operational decision making as it relates to E3.
- (U)(\$280) Criteria and Test Procedures: Continue to investigate industrial standards (foreign and domestic) for conversion to military standards. Continue to incorporate Coherent Measurement Techniques into E3 test criteria.

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EXHIBIT R-2a, RDT&E,N Project Justification

DATE: February 1999

BUDGET ACTIVITY: 6

PROGRAM ELEMENT: 0605866N

PROJECT NUMBER: X0706

PROGRAM ELEMENT TITLE: SEW Support

PROJECT TITLE: EMI Reduction and Radio  
Frequency Management

3. (U) 2000 PLAN:

- (U)(\$662) ASPECTS: Complete development of capability to receive real-time recordings of the EME to be used in frequency management. Continue ASPECTS and EMCAP software updates. Continue real-time frequency management software development.
- (U)(\$745) BEES: Continue development of generic and specific electronic-communication system models. Apply conditional logic to selected additional models to replicate operational decision making as it relates to E3.
- (U)(\$249) Criteria and Test Procedures: Continue to investigate industrial standards (foreign and domestic) for conversion to military standards. Continue to incorporate Coherent Measurement Techniques into E3 test criteria.

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EXHIBIT R-2a, RDT&E,N Project Justification

DATE: February 1999

BUDGET ACTIVITY: 6 PROGRAM ELEMENT: 0605866N  
PROGRAM ELEMENT TITLE: SEW Support

PROJECT NUMBER: X0706  
PROJECT TITLE: EMI Reduction and Radio  
Frequency Management

B. (U) PROGRAM CHANGE SUMMARY:

FY 1998: \$-32K: SBIR Reduction. \$-59K: BTRs.

FY 1999: \$-4K: Revised Economic Assumptions. \$-2K: BTR.

FY 2000: \$1,005K: Realignment of EMI OPN funding to RDT&E. \$13K: NWCF Rates. \$-61K: BTRs.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

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EXHIBIT R-3, RDT&E,N Project Cost Analysis

DATE: February 1999

BUDGET ACTIVITY: 6

PROGRAM ELEMENT: 0605866N

PROJECT NUMBER: X0706

Exhibit R-3 Cost Analysis (page 1)								Date:		
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT				PROJECT NAME AND NUMBER		
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY's Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal Product Development										
Remarks:										
ASPECTS/EMCAP Development	Various	Various	3433	745	TBD	662	TBD	Cont.	Cont.	Cont.
E3 Analysis Tool Development	Various	Various	3291	835	TBD	745	TBD	Cont.	Cont.	Cont.
Specifications and Standards	Various	Various	1703	280	TBD	249	TBD	Cont.	Cont.	Cont.
Subtotal Support			8427	1860		1656		Cont.	Cont.	Cont.
Remarks										

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EXHIBIT R-3, RDT&E,N Project Cost Analysis

DATE: February 1999

BUDGET ACTIVITY: 6

PROGRAM ELEMENT: 0605866N

PROJECT NUMBER: X0706

Exhibit R-3 Cost Analysis (page 2)								Date:			
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT				PROJECT NAME AND NUMBER			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY's Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
Subtotal T&E											
Remarks											
Subtotal Management											
Remarks											
Total Cost			8427	1860		1656		Cont.	Cont.	Cont.	